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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/760,276 | 01/21/2004 | Min-soo Kim | 249/444 | 1403 |

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EXAMINER

LEBRON, JANNELLE M

ART UNIT PAPER NUMBER

2861

DATE MAILED: 03/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

HA

Office Action Summary

Application No.

10/760,276

Applicant(s)

KIM ET AL.

Examiner

Jannelle M. Lebron

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 9-18 and 27-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 19-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/2/05, 1/2/04, 9/13/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 9-18 and 27-35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 01/30/2006.

Claim Rejections - 35 USC § 102

2. Claims 1-8 and 19-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Hotomi et al. (US Patent 5,515,085).
3. Hotomi et al. discloses a droplet ejector comprising:
 - Claim 1:

A fluid path through which a fluid moves (as seen in figure 14), a nozzle (23 in figure 14) being formed on one end of the fluid path;

a volumetric structure (26 in figure 14) formed in the fluid path, the volumetric structure being sensitive to an external stimulus and being capable of varying in size to eject a droplet of the fluid through the nozzle (column 4, lines 33-40); and

a stimulus generator (31 and 32 in figure 14), which applies a stimulus to the volumetric structure to vary a size of the volumetric structure (column 6, lines 43-46).

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- Claim 2:

Wherein the volumetric structure (26) expands in size to eject the droplet through the nozzle (23), and the stimulus generator (31 and 32) applies the stimulus to the volumetric structure to expand the size of the volumetric structure (column 4, lines 33-37).

- Claim 3:

Wherein the volumetric structure (26) is formed of stimulus sensitive hydrogel (column 3, lines 10-16; as seen in figure 1).

- Claim 4:

Wherein the stimulus sensitive hydrogel is electrical field sensitive hydrogel (column 4, lines 33-37).

- Claim 5:

Wherein the fluid path comprises:

a chamber, which is filled with the fluid to be ejected and is formed under the nozzle (as seen in figure 14); and

a channel for supplying the fluid to the chamber (column 6, lines 33-35),

wherein the volumetric structure (26) is formed in the chamber (as seen in figure 14).

- Claim 7:

Wherein the stimulus generator is a pair of electrodes respectively disposed above and below the volumetric structure (column 6, lines 43-46).

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- Claim 8:

Wherein one of the pair of electrodes is a cathode and is disposed above the volumetric structure (column 6, lines 46-49).

4. Hotomi et al. discloses an ink-jet printhead, comprising:

- Claim 19:

a substrate on which a manifold (24 in figure 14) for supplying ink is formed;

a barrier layer (29 in figure 14), which is stacked on the substrate and on which an ink chamber to be filled with ink to be ejected and an ink channel for providing communication between the ink chamber and the manifold are formed (as seen in figure 14);

a nozzle plate, which is stacked on the barrier layer (19 in figure 14)) and in which a nozzle (23 in figure 14), through which an ink droplet is ejected, is formed (as seen in figure 14);

a volumetric structure (2 in figure 14), which is formed in a position where ink moves, the volumetric structure being sensitive to an external stimulus and being capable of varying in size to eject the ink droplet through the nozzle (column 4, lines 33-40); and

a stimulus generator (31 and 32 in figure 14), which applies a stimulus to the volumetric structure to vary a size of the volumetric structure (column 6, lines 43-46).

- Claim 20:

Wherein the volumetric structure (26) expands in size to eject the ink droplet through the nozzle (23), and the stimulus generator (31 and 32) applies the stimulus to

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the volumetric structure to expand the size of the volumetric structure (column 4, lines 33-37).

- Claim 21:

Wherein the volumetric structure (26) is formed of stimulus sensitive hydrogel (column 3, lines 10-16; as seen in figure 1).

- Claim 22:

Wherein the stimulus sensitive hydrogel is electrical field sensitive hydrogel (column 4, lines 33-37).

- Claim 23:

Wherein the volumetric structure (26) is formed in the ink chamber (as seen in figure 14).

- Claim 25:

Wherein the stimulus generator is a pair of electrodes respectively disposed above and below the volumetric structure (column 6, lines 43-46).

- Claim 26:

Wherein one of the pair of electrodes is a cathode and is disposed above the volumetric structure (column 6, lines 46-49).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 6 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Hotomi et al. (US Patent 5,515,085).

7. Hotomi et al. teach all claimed features of the invention including a volumetric structure formed in the chamber (25 in figure 14). However, Hotomi et al. do not explicitly teach the volumetric structure having a columnar shape, hexahedral shape, or a cylindrical shape. It would have been obvious to one of ordinary skill in the art to make the volumetric structure to have a columnar, hexahedral, or a cylindrical shape since it has been held that a particular configuration is insignificant or is anything more than one of numerous configurations a person of ordinary skill in the art would find obvious. *See Graham v. John Deere Co.*, 383 US1, 148 USPQ 459.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jannelle M. Lebron whose telephone number is (571) 272-2729. The examiner can normally be reached on Monday thru Friday 8:30am-5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JML
02/23/2006



LAMSON NGUYEN
PRIMARY EXAMINER
2/27/06